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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,701	03/28/2001	Ming-Hsien Chou	S00-085	9212
30869	7590	06/08/2005	EXAMINER	
LUMEN INTELLECTUAL PROPERTY SERVICES, INC. 2345 YALE STREET, 2ND FLOOR PALO ALTO, CA 94306			LEE, JOHN D	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/821,701	Applicant(s) CHOU ET AL.	
	Examiner John D. Lee	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-31 and 36-53 is/are allowed.
- 6) ☒ Claim(s) 32 is/are rejected.
- 7) ☒ Claim(s) 33-35 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0801</u> . | 6) <input type="checkbox"/> Other: ____. |

The eight (8) sheets of drawings filed in this application are acceptable.

The disclosure has not been studied to the extent necessary to discover all possible minor errors therein. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 32 is rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Chou et al, *IEEE Photonics Technology Letters*, June 1999, pages 653-655 (submitted by applicant). Chou et al discloses a method for engineering a multi-channel optical frequency mixer comprising the same three steps set forth in this claim. Chou et al provides a nonlinear optical material having an effective nonlinearity d_{eff} (lithium niobate, LiNbO_3); determines at least two short wavelength channels (Figure 2); and produces a quasi-phase-matching grating in the nonlinear material to define a spatial distribution of the effective nonlinearity d_{eff} , so that the at least two wavelength channels are quasi-phase-matched for performing optical frequency mixing. See especially page 653, right column, lines 4-7 and 33-37; and page 654, left column, lines 32-35.

Claims 1-31 and 36-53 are allowable over the prior art of record. The prior art of record (including the Chou et al reference) does not disclose or suggest a multi-channel optical frequency mixer of the type used in Chou et al wherein a Fourier transform of the spatial distribution to the spatial frequency domain defines at least two short wavelength channels which are quasi-phase-matched for performing optical frequency mixing.

Similarly, the prior art of record fails to disclose or suggest a method of performing all-optical signal processing using such a multi-channel optical frequency mixer.

Claims 33-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record (including the Chou et al reference) does not disclose or suggest a method for engineering a multi-channel optical frequency mixer of the type used in Chou et al wherein the quasi-phase-matching grating is produced by selecting a Fourier transform of the spatial distribution to the spatial frequency domain to define at least two dominant Fourier components corresponding to the at least two short wavelength channels which are quasi-phase-matched for performing optical frequency mixing.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 6,762,876 to Tilleman et al describes a multi-channel optical frequency mixer utilizing quasi-phase-matching, and which employs some of applicant's claimed details of polarization control, tapering, etc. U.S. Patent Application Publication 2002/0118439 A1 to Batchko shows another multi-channel optical frequency mixer.

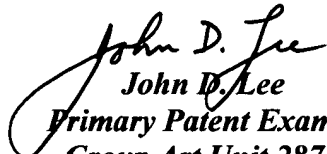
All of the prior art documents cited by applicant in the Information Disclosure Statement filed on August 28, 2001 (including the Chou et al reference relied on in the rejection above), have been considered and made of record. Note the attached initialed copy of form PTO-1449.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the Examiner presumes that the subject matter of the

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various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. §§ 102(e), (f) or (g) prior art under 35 U.S.C. § 103(a).

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (571) 272-2351. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562, to the technical support staff supervisor (Team 8) at telephone number (571) 272-1564, or to the Technology Center 2800 Customer Service Office at telephone number (571) 272-1626.


John D. Lee
Primary Patent Examiner
Group Art Unit 2874